

## A B S T R A C T

Aluminum alloy thermal exchanger having a surface of not containing any harmful chromium ion and having good corrosion resistance and good hydro-philicity. Aluminum alloy thermal exchanger having the first protective layer being produced by using the treatment liquid containing (a) and (b) below, and it further has the second protective layer being produced by adding the treatment liquid containing (c), (d), (e), (f) below, and the weight of zirconium in (f) is 40~350 % to the weight of vanadium in (e).

- (a) water soluble vanadium compound
- (b) fluoro zirconium complex compound
- (c) aqueous polyvinyl alcohol polymer having vinyl alcohol unit of more than 40 mol % and additional polymerization unit (other than the vinyl alcohol unit of above) of less than 60 mol %
- (d) polyoxyethylene glycol of 6,000~1,000,000 in average molecular weight
- (e) vanadium compound
- (f) zirconium compound